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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,761	06/10/2002	David J Glass	REG 720-US	4464

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EXAMINER	
ALONZO, NORMA LYN	

ART UNIT	PAPER NUMBER
1632	

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/018,761	GLASS ET AL.	
	Examiner	Art Unit	
	Norma C Alonzo	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-41 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) 1-41 are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-41 are pending.

Election/Restrictions

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1-2, 6, 34-35, 39, drawn to a method of inhibiting atrophy in skeletal muscle cells comprising treatment of cells with an inhibitor of Ras.

Group 2, claim(s) 1,3,34,36, drawn to a method of inhibiting atrophy in skeletal muscle cells comprising treatment of cells with an inhibitor of Raf.

Group 3, claim(s) 1,4,6, 34, 37, 39, drawn to a method of inhibiting atrophy in skeletal muscle cells comprising treatment of cells with an inhibitor of Mek.

Group 4, claim(s) 1,5, 34, 38, drawn to a method of inhibiting atrophy in skeletal muscle cells comprising treatment of cells with an inhibitor of Erk.

Group 5, claim(s) 7-15, drawn to a method of identifying an agent *in vitro* wherein said agent inhibits atrophy comprising comparing amount of atrophy in skeletal muscle cells constitutively expressing active mutant forms of Ras/Raf/Mek/Erk and subjected to said agent to untreated skeletal muscle cells.

Group 6, claim(s) 16-18, drawn to a method of identifying an agent *in vivo* wherein said agent inhibits atrophy comprising comparing amount of atrophy in skeletal muscle cells in a transgenic organism constitutively expressing active mutant forms of Ras/Raf/Mek/Erk and subjected to said agent to untreated skeletal muscles cells of said transgenic organism.

Group 7, claim(s) 19, drawn to a method of identifying an agent wherein said agent inhibits atrophy in muscle cells by measuring the amount of Ras/Raf/Mek/Erk activity before and after administration of said agent to a muscle cell.

Group 8, claim(s) 20-25, drawn to a method of identifying a gene *in vitro* wherein said gene encodes a gene product that inhibits skeletal muscle atrophy comprising introducing a test gene into a muscle cells that constitutively expresses active mutant forms of Ras/Raf/Mek/Erk and comparing amount of atrophy to untreated muscle cells.

Group 9, claim(s) 26-28, drawn to a method of identifying a gene *in vivo* wherein said gene encodes a gene product that inhibits skeletal muscle atrophy comprising introducing a test gene into a muscle cells that constitutively expresses active mutant forms of Ras/Raf/Mek/Erk and comparing amount of atrophy to untreated muscle cells wherein the muscles cells are within a transgenic organism.

Group 10, claim(s) 29-33, 40-41, drawn to a method of inhibiting atrophy in a vertebrate animal having an atrophy-inducing condition comprising treating said animal with an effective amount of an inhibitor of Ras.

Group 11, claim(s) 29-33, 40-41, drawn to a method of inhibiting atrophy in a vertebrate animal having an atrophy-inducing condition comprising treating said animal with an effective amount of an inhibitor of Raf.

Group 12, claim(s) 29-33, 40-41, drawn to a method of inhibiting atrophy in a vertebrate animal having an atrophy-inducing condition comprising treating said animal with an effective amount of an inhibitor of Mek.

Group 13, claim(s) 29-33, 40-41, drawn to a method of inhibiting atrophy in a vertebrate animal having an atrophy-inducing condition comprising treating said animal with an effective amount of an inhibitor of Erk.

3. According to PCT Rule 13.2, unity of invention exists only when the shared same or corresponding technical feature is a contribution over the prior art. The inventions listed as Groups 1-13 do not relate to a single general inventive concept because they lack the same or corresponding special technical feature. The technical feature of Group 1-5 is the inhibition of atrophy by treating cells with an inhibitor of Ras and members of downstream pathways, Raf/Mek/Erk. This technical feature is shown by Hunter et al. (J Bio Chem 270(30): 23173-23178, 1995) to lack novelty or inventive step because the authors identify "Ras and subsequent downstream signaling pathways as potential targets for interrupting the pathological process of hypertrophy in the *in vivo* context" and that "agents that can block the oncogenic effects of Ras, such as retinoids, can serve as suppressors of myocardial cell hypertrophy in an *in vitro* model system, supporting the potential therapeutic importance" of the observations that upregulation of Ras induces cardiac hypertrophy in transgenic mice (page 23177, paragraph 3) and does not make a contribution over the prior art. Additionally, the inventions of groups I-IV lack the same special technical feature because Raf, Ref, Mek and Erk are distinct proteins having different amino acid structure and an agent that inhibits Ras would not inhibit other proteins (Ref, Mek, Erk).

The inventions of groups 1-13 further do not relate to a single general inventive concept. The groups are directed to methods wherein method steps comprise compositions that have different modes of operation, function and physical characteristics. For example, an *in vitro* method of inhibiting atrophy by inhibiting the

proteins Ras, Raf, Mek, or Erk is distinct from an *in vitro* method of identifying an atrophy-inhibiting agent by measuring amount of atrophy in muscles cells subjected to said, which is distinct from an *in vivo* method of identifying an atrophy-inhibiting agent by measuring amount of atrophy in muscle cells subjected to said agent, which is distinct from a method of identifying an atrophy-inhibiting agent by measuring the amount of Ras/Raf/Mek/Erk activity in a muscle cell subjected to said agent, which is distinct from an *in vitro* method of identifying an atrophy-inhibiting gene product by measuring amount of atrophy in muscle cells subjected to a test gene, which is distinct from an *in vivo* method of identifying an atrophy-inhibiting gene product by measuring amount of atrophy in muscles cells subjected to a test gene, which is distinct from an *in vivo* method of inhibiting atrophy by inhibiting the proteins Ras, Raf, Mek or Erk. The groups therefore do not share the same special technical feature.

4. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Claims 15, 18, 27, and 28 recite the following species: transgenic fly, worm, bird, chicken, turkey, mouse, rat, dog, cat, rabbit, sheep, pig, goat, and horse.

Claims 30 and 41 recite the following species: chicken, rodent, rabbit, dog, cat, cow, horse, pig, sheep, primate and human.

Claim 33 recites the following species: denervation, starvation, nutritional deficiency, metabolic stress, diabetes, aging, muscular dystrophy and myopathy.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The election of species in different claims must be consistent with the elected invention. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.
Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norma C Alonzo whose telephone number is 571-272-2910. The examiner can normally be reached on 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 571-272-0804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NCA

RAM R. SHUKLA, PH.D.
PRIMARY EXAMINER